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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,108	03/31/2004	Sushil Kumar Kaura	11378.61US01	5192
23552 7590 07/23/2007 MERCHANT & GOULD PC P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903			EXAMINER ANGEBRANDT, MARTIN J	
			ART UNIT 1756	PAPER NUMBER
			MAIL DATE 07/23/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/814,108

Applicant(s)

KAURA ET AL.

Examiner

Martin J. Angebrannt

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 9/30/04 & 3/31/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

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1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 6-9,12,13 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 should be dependent upon claim 2 as claim 1 does not recite a "slit master hologram recording plate" and therefore the claim lacks antecedent basis for this term.

Claim 6 should be dependent upon claim 2 as no step b appears in claim 1 and therefore this lacks antecedent basis.

In claim 19, please use different step indicia (ie, not a, b and c) as these have been used in claim 14 already. The examiner suggests C1, C2 and C3.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claim 1 is rejected under 35 U.S.C. 102(b) as being fully anticipated by Lin et al. "Experimental techniques in making multicolor white light reconstructed holograms", Appl. Opt., Vol. 6(7) pp. 1255-1258.

Figures 6 and 7 on page 1257 show color images reconstructed from a hologram where different areas have different colors. The grating values correspond to the grating periods (d). See [0024] of the prepub of the instant specification for support for this interpretation.

The claims do not exclude a naturally multicolored object.

Noting that in the prior art and the instant claims, the holograms are multicolor rainbow holograms, the choice of particular objects to be recorded in the holograms is a matter of design choice or constitutes printed matter, without a new, specific relationship with the substrate/medium and so cannot confer patentability upon the claims.

6. Claim 1 is rejected under 35 U.S.C. 102(b) as being fully anticipated by Kellie '633.

See the figure 1a which uses a multicolored potted flower as the object.

7. Claim 1 is rejected under 35 U.S.C. 102(b) as being fully anticipated by Liu et al. "Rainbow holographic camera" Opt. Lett. Vol. 26(15) pp. 1146-1148 ((08/2001)

See the figure 5 which shows the recorded full color hologram.

8. Claim 1 is rejected under 35 U.S.C. 102(b) as being fully anticipated by Tamura "Pseudocolor encoding of holographic images using a single wavelength". Appl. Opt., Vol. 17(16) pp. 2532-2536 (08/1978)

See the figure 5, which shows the recorded full color hologram.

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9. Claims 1-3 and 12-13 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Ohnuma et al. "Color rainbow hologram and color reproduction". Appl. Opt., Vol. 27(18) pp. 3859-3863 (09/1988)

See the figure 7, which shows the recorded full color hologram. Figure 1 shows the optical arrangement for forming the slit hologram where the images is passed through a diffuser and the holographic recording materials is masked by slits. ( $S_r$ ,  $S_g$ ,  $S_b$ ). This is then used as the object for recording the color rainbow hologram as illustrated in figure 2. The reconstruction of this as a full color image with overlapping field of view is illustrated in figure 3. The position of the slit and effect of the slit width on the color gamut and reproduction is disclosed on page 3861-2. An argon ion laser is used as the laser.

The claims do not exclude a naturally multicolored object.

10. Claims 1-13 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Hariharan et al. "Multicolor holographic images with a white light source", Opt. Lett., Vol. 1(1) p 8-9 (07/1977).

See the figure 1a, which shows the recording of the primary holograms to form a slit hologram and used to record the final hologram as illustrated in figure 1b. Figure 1b shows the slit hologram, the use of a beam splitter, 5 plane mirrors, and various lenses to expend the laser beams for the reference and object arms.

The claims do not exclude a naturally multicolored object.

11. Claim 1 is rejected under 35 U.S.C. 102(b) as being fully anticipated by Toda et al. JP 04-275586 (with translation attached)

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See the figure 1, which shows the recorded full color hologram, illustrating red, green and blue data. [0027]. Figure 9 illustrates the an apparatus for recording rainbow holograms ,where the laser is split into two beams/arms, these beams are reflected by plane mirrors and expanded by lenses to acts as a reference beam and upon passing through the master hologram masked by a slit the object beam [0007].

12. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hariharan et al. "Multicolor holographic images with a white light source", Opt. Lett., Vol. 1(1) p 8-9 (07/1977), in view of Lin et al. "Experimental techniques in making multicolor white light reconstructed holograms", Appl. Opt., Vol. 6(7) pp. 1255-1258, Liu et al. "Rainbow holographic camera" Opt. Lett. Vol. 26(15) pp. 1146-1148 ((08/2001) or Kellie '633.

It would have been obvious to one skilled in the art to modify the process of Hariharan et al. "Multicolor holographic images with a white light source", Opt. Lett., Vol. 1(1) p 8-9 (07/1977) by using multicolored objects such as those disclosed by Lin et al. "Experimental techniques in making multicolor white light reconstructed holograms", Appl. Opt., Vol. 6(7) pp. 1255-1258, Liu et al. "Rainbow holographic camera" Opt. Lett. Vol. 26(15) pp. 1146-1148 ((08/2001) or Kellie '633 with a reasonable expectation of forming a useful rainbow hologram based upon the formation of holograms of these images by Lin et al. "Experimental techniques in making multicolor white light reconstructed holograms", Appl. Opt., Vol. 6(7) pp. 1255-1258, Liu et al. "Rainbow holographic camera" Opt. Lett. Vol. 26(15) pp. 1146-1148 ((08/2001) or Kellie '633.

13. Claims 1 and 14-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. JP 05-166017 (machine translation attached) and Aggarwal et al., "encoded

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reference wave security holograms with enhanced features”, J. Opt. A:Pure Appl. Opt., Vol. 6(2) pp. 278-281 (01/2004).

Yamazaki et al. JP 05-166017 teaches the recording of a rainbow hologram by forming the slit master (14) in figure 3a of the original object (11). The rainbow hologram is recorded in figure 3b using the master. Replay of the rainbow hologram with white light reproduces the slit image from the slit master. [0012-0013]. The use of this technique with multicolored rainbow holograms is disclosed [0007,0014]. The slit images is judged by a CCD camera or the like [0015]. The use of this with a multicolor rainbow holograms is disclosed. [0018].

Aggarwal et al., “encoded reference wave security holograms with enhanced features”, J. Opt. A:Pure Appl. Opt., Vol. 6(2) pp. 278-281 (01/2004) teaches forming an encoded key hologram where the object arm has random phase in the path (figure 2). The key hologram is then used to form a second hologram, where the beam passing through the key hologram is considered the reference beam and the object beams are focused. (figure 3). Upon replay of the key holograms such that it generates the reference beam for the security hologram, the focusing of the object beams is reproduced and can be detected by CCD cameras or the like (see figure 4). The applicant is also referred to the accompanying text. A HeNe laser is used for the recording. The analysis of colors of holograms is also disclosed as is the use of photographic or CCD cameras to capture the image (page 278)

It would have been obvious to modify the recording process of Yamazaki et al. JP 05-166017 by focussing of the reference beam (the object beam in the parlance of Aggarwal et al) when forming the rainbow hologram in the process illustrated by figure 3b and to perform the replay shown in figure 3c using an encoded reference beam generated by the slit holographic

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master to achieve verification that the slit master corresponded to the rainbow hologram using CCD detectors as taught by Aggarwal et al, with a reasonable expectation of success based upon the use of CCD detection in both references to detect focused images generated by the encoded/rainbow hologram. Further, it would have been obvious to use a HeNe laser in the recording and replay processes based upon the use of this laser by Aggarwal et al in the prior art.

Noting that in the prior art and the instant claims, the holograms are multicolor rainbow holograms or encoded holograms, the choice of particular objects to be recorded in the holograms is a matter of design choice or constitutes printed matter, without a new, specific relationship with the substrate/medium and so cannot confer patentability upon the claims.

14. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. JP 05-166017 (machine translation attached) and Aggarwal et al., "encoded reference wave security holograms with enhanced features", J. Opt. A:Pure Appl. Opt., Vol. 6(2) pp. 278-281 (01/2004), further in view of Hariharan et al. "Multicolor holographic images with a white light source", Opt. Lett., Vol. 1(1) p 8-9 (07/1977), in view of Lin et al. "Experimental techniques in making multicolor white light reconstructed holograms", Appl. Opt., Vol. 6(7) pp. 1255-1258, Liu et al. "Rainbow holographic camera" Opt. Lett. Vol. 26(15) pp. 1146-1148 ((08/2001) or Kellie '633.

To address other embodiments bounded by the claims, in particular the case where particular objects are used which have different pure colors in different sections and to evidence the use of HeNe lasers in formation multicolor rainbow holograms, the examiner cites Hariharan et al. "Multicolor holographic images with a white light source", Opt. Lett., Vol. 1(1) p 8-9 (07/1977), Lin et al. "Experimental techniques in making multicolor white light reconstructed



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holograms", Appl. Opt., Vol. 6(7) pp. 1255-1258, Liu et al. "Rainbow holographic camera" Opt. Lett. Vol. 26(15) pp. 1146-1148 ((08/2001) and Kellie '633 and holds that it would have been obvious to one skilled in the art to modify the processes rendered obvious by the combination of Yamazaki et al. JP 05-166017 (machine translation attached) and Aggarwal et al., "encoded reference wave security holograms with enhanced features", J. Opt. A: Pure Appl. Opt., Vol. 6(2) pp. 278-281 (01/2004) by using HeNe lasers in the recording of at least one of the original exposures of Yamazaki et al. JP 05-166017 to record the red data as taught by Hariharan et al. "Multicolor holographic images with a white light source", Opt. Lett., Vol. 1(1) p 8-9 (07/1977) and use any known multicolored objects such as those disclosed by Lin et al. "Experimental techniques in making multicolor white light reconstructed holograms", Appl. Opt., Vol. 6(7) pp. 1255-1258, Liu et al. "Rainbow holographic camera" Opt. Lett. Vol. 26(15) pp. 1146-1148 ((08/2001) or Kellie '633 with a reasonable expectation of forming a useful rainbow hologram based upon the formation of holograms of these images by Lin et al. "Experimental techniques in making multicolor white light reconstructed holograms", Appl. Opt., Vol. 6(7) pp. 1255-1258, Liu et al. "Rainbow holographic camera" Opt. Lett. Vol. 26(15) pp. 1146-1148 ((08/2001) or Kellie '633.

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Benton '989, Kamata et al. 62-258488, JP 03-280078 (with translation), DE 3035684, Kou JP 07-104652, Wesskamp et al., "Hybrid color holograms", Opt. Lett., Vol. 21(22) pp. 1863-1865 teach multicolored or rainbow holograms.

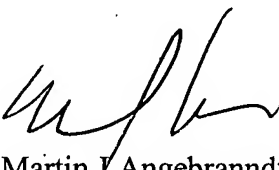
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Voeman et al., WO 92/01975, Kishimoto et al. JP 09-152828, Nishihara et al. JP 2002-172882, Nishihara et al. JP 2002-169451, Ishikawa et al. JP 01-321471, Tabayashi et al. '240 teach color measurement of holograms.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebranndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Martin J. Angebranndt  
Primary Examiner  
Art Unit 1756

7/19/2007